

REMARKS

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Objection to the Claims

Claim 10 is objected to under 37 CFR 1.75(a) for failing to particularly point out and distinctly claim the subject matter which applicant regards as his/her invention. Namely, clarification is requested for the expression "creating a virtual three dimensional model with respect to a mechanical articulator".

The Applicant respectfully submits that the expression "with respect to" can also be understood as "in relation to" or "in reference to". Therefore, the claim should be understood as meaning that a mechanical articulator is used as a model for the virtual three dimensional model that is created.

Rejection based on 35 U.S.C. 101

Claim 23 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 23 has been deleted.

Rejections based on Prior Art

Claims 1-4, 9, 10, 12, 14 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Andersson (US 6,062,861). This rejection is respectfully traversed for the following reasons.

Andersson describes an apparatus for representing position and function of the jaw and bite of an individual. The apparatus includes a computer having a memory. However, any simulation of movements of the upper and lower jaw is done by a conventional, mechanical articulator, such as the one shown in figure 3 of D1. As is stated at column 4, lines 26-30, "The articulator comprises hinge member(s) 22, by means of which member(s) simulation movements can be initiated in a known manner, for example manually, electrically, pneumatically, etc". While Andersson alludes to virtual simulation: "The model produced is applied in the articulator according to FIG. 3 (can also be simulated on the computer screen 1a in whole or in part)", column 5, lines 19-21, there are no explicit teachings with respect to this simulation. In fact, when describing the data illustrated on the computer screen, Andersson specifically states that the data is two-dimensional ("one vertical section at a time is reproduced on the computer screen", column 3, lines 61-62). In addition, Andersson teaches having an object "imaged on a photograph, drawing or the like" (column 4, line 7), which further confirms the two-dimensional nature of the

virtual image. Therefore, Andersson fails to teach or suggest "a virtual articulator representing a three dimensional model of a patient's upper and lower dental arches including data defining a constraint of motion having a plurality of degrees of freedom between said upper and lower dental arches", as recited in claim 1. Andersson also fails to teach or suggest "creating a virtual three dimensional dental model including parameters defining a constraint of motion between an upper and a lower dental arch", as recited in claim 9.

As per §2131 of the MPEP, "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference." *Verdegaal Bros v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim. Contrary to the Examiner's assertion that all elements are disclosed in the Andersson reference, this is clearly not the case. The rejection is unsupported by the art and should be withdrawn.

Claim 15 is rejected under 35 U.S.C. 102(b) as being anticipated by Jordan (US 6,152,731). This rejection is respectfully traversed for the following reasons.

Jordan describes methods for use in dental articulation that overcome the problems noted with respect to conventional mechanical articulators. Using digital dental images, there are provided various methods and programs for use in dental articulation. In particular, what is required as input data for the model creation program is digital dental arch data representative of upper and lower dental arches of a patient, bite alignment data representative of the relationship of the upper and lower dental arches of a patient, and hinge axis data representative of the relationship between the upper and/or lower dental arches of the patient and the condyle axis of the patient.

Jordan fails to teach "digitizing said physical upper dental arch along with reference markers referenced with respect to said physical lower dental arch model" and "digitizing said physical lower dental arch along with reference markers with respect to said physical upper dental arch model", as recited in claim 15. While Jordan states that "alignment features may be added to a model and thereafter digitized with the digitization of the dental arches of the patient" (column 10, lines 9-11), this differs from what is recited in claim 15. For one, Jordan describes these "alignment features" as "one or more points, lines, or planes having common features extending from one dental arch to another" (emphasis added). This does not correspond to "reference markers referenced with respect to said physical lower dental arch model" and "reference markers

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with respect to said physical upper dental arch model", wherein the upper and dental arch are digitized separately, as recited in the claim.

Furthermore, the Examiner states that "[t]he alignment features are then used by the computer (i.e. "transition matrices") to correlate the upper and lower digital arch images". However, the Examiner has failed to show which part of Jordan supports this assertion and where Jordan teaches the step of "calculating transition matrices correlating said upper dental arch and said lower dental arch". The use of a computer to represent the upper and lower dental arches virtually does not necessarily imply that transition matrices are calculated and used to correlate the dental arches. In fact, for the method described in Jordan, it is necessary to have data relating to the position of the hinges in order to position the upper and lower dental arches with respect to one another and with respect to the jaw. Therefore, the 102(b) rejection of claim 15 is unsupported by the art and should be withdrawn.

The Applicant believes that all issues have been addressed and the present application is now in good standing. A notice of allowance for claims 1-22 is respectfully requested.

Respectfully submitted,
Jean-Marc PEROT et al.



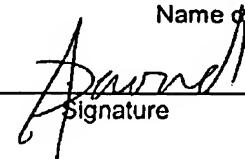
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